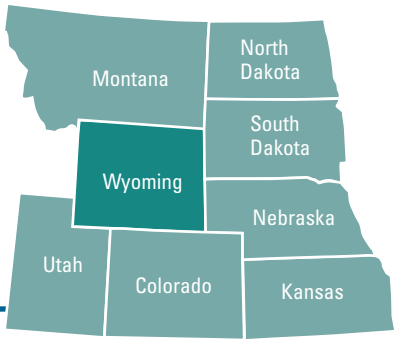
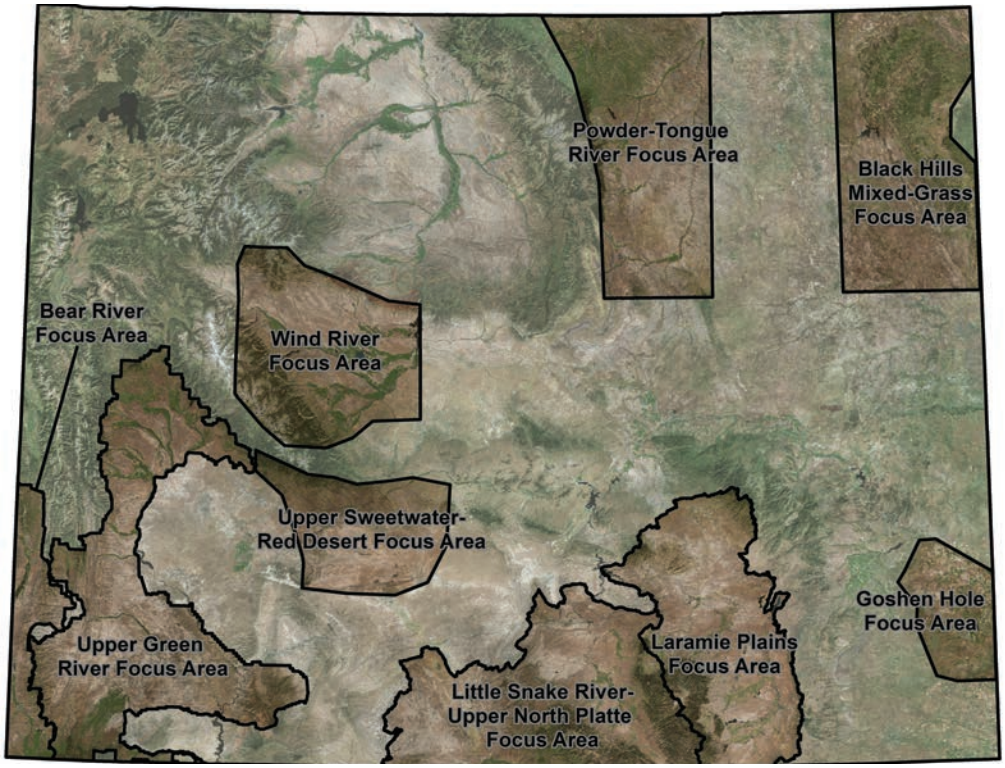
Wyoming





Wyoming PFW program Focus Areas. USFWS map.

Introduction and Overview

Wyoming is at the edge of two of North America's largest landforms, the Rocky Mountains and the Great Plains. In general terms, the western two-thirds of the state is a great plateau broken by a number of mountain ranges, while the Great Plains slopes eastwardly from the Rockies with the Black Hills being the major exception. Having the second highest mean elevation in the United States at 6,700 ft above sea level, this topographical diversity creates a wide-ranging semi-arid climate. Annual precipitation from rain and snow ranges from as little as five inches to as much as 45 inches per year. Plants and animals found here have adapted to variable and often harsh climatic conditions typical of a high elevation cold desert. Plant communities of the great plateau are primarily sage brush steppe whereas mixed and shortgrass prairie dominate the eastern plains area. With 85% of the state being considered rangelands, it's no surprise that domestic livestock production is an important component of Wyoming's economic and cultural identity.

Like many western states, Wyoming is comprised of a combination of private, state, federal and tribal lands. Agricultural lands are an important part of Wyoming's landscape. Wyoming is 46% private and tribal land of which 90% is devoted to agriculture (Hamerlinck et al. 2013). While private land is dominated by agricultural production, public land leases are an essential part of many western ranching operations. Roughly 2,800 ranchers in Wyoming hold grazing permits on BLM public land. These ranchers represent 44% of the ranching operations in the state and about 73% of the acres in ranching (BLM 2014). These facts demonstrate that a relatively small number of ranches provide an immense amount of open space and wildlife habitat and strongly influence the majority of the land management in the state. There continues to be outstanding opportunities for landscape-scale conservation on working agricultural lands in Wyoming.

Plan Development

The Wyoming Strategic Plan identifies areas of greatest conservation need and species richness (focus areas), focal species, desired conservation actions and habitat improvement targets. Focal species were initially identified from dedicated categories of Federal Trust Species along with internal national, regional,

and refuge specific operational and resource priorities (Table 1). Consideration was also given to species identified in the many local, state and federal resource conservation plans of our partners (e.g., Wyoming State Wildlife Action Plan). It was further refined to species that met at least one of the following five characteristics, 1) high conservation need, 2) representative of a broader guild of species sharing the same or similar conservation needs, 3) high level of current program effort, 4) potential to stimulate partnerships, and 5) high likelihood that factors affecting the status can realistically be addressed. PFW recognizes that this list of wildlife resources is also held in trust and/or important to our federal, state, and local partners. Therefore, it was important that our Strategic Plan incorporate partner input that is consistent with Service needs and mandates.

Focus areas were established to more efficiently conserve priority fish and wildlife species and/or priority habitats through the implementation of collaborative habitat restoration, management and protection measures. These areas were identified through a combination of consensus of opinion and technical assessment based on available biological and sociopolitical data. Focus areas were developed using several elements including land ownership patterns, threats/stressors (limiting factors), habitat improvement and partnering opportunities, focal species habitats, unique lands and trust responsibilities. In general, focus areas target priority sagebrush/grassland species on predominately privately owned lands containing

Table 1. Table of Service focal species and priority landscapes.

National	**Regional**	**Regional Refuge**
Sagebrush Ecosystem	Sagebrush Ecosystem	Sagebrush Ecosystem
Monarch Butterfly	Monarch Butterfly	Bear River Watershed
	Grassland Migratory Birds	
	Colorado River Fishes	
	Native Salmonids	
	Golden Eagle	
	Pallid Sturgeon	
	Black-Footed Ferret	
	Grizzly Bear	
	Lynx	

Table 2. Wyoming PFW land area, land ownership, percent of greater sage-grouse core areas, and National Wetland Inventory (NWI) statistics by focus area.

Focus Area	**Area (ac) Contained**	**% Private Land**	**% Sage-Grouse Core**	**NWI (ac)**
Bear River	791,000	46%	32%	44,000
Green River	3.98 million	49%	42%	260,000
USRD	1.52 million	5%	65%	15,000
Wind River	2.48 million	25% & 54% tribal	20%	96,000
Powder Tongue River	3.04 million	75%	25%*	29,000
Black Hills Mixed Grass	3.18 million	77%	21%*	25,000
Goshen Hole	855,000	92%	N/A	12,000
Laramie Plains	2.78 million	64%	23%	127,000
LSUNP	3.28 million	33%	33%	79,000

*Includes WYGEO "Connectivity Area"

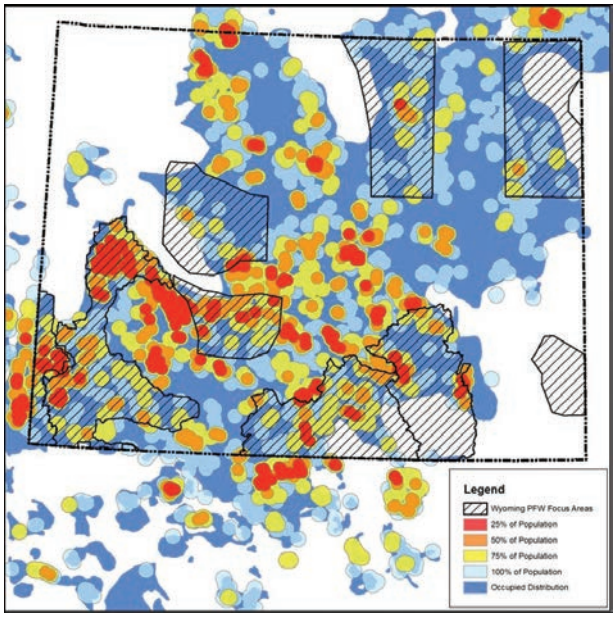


Figure 1. Rangewide greater sage-grouse breeding densities and Wyoming PFW Focus Areas.

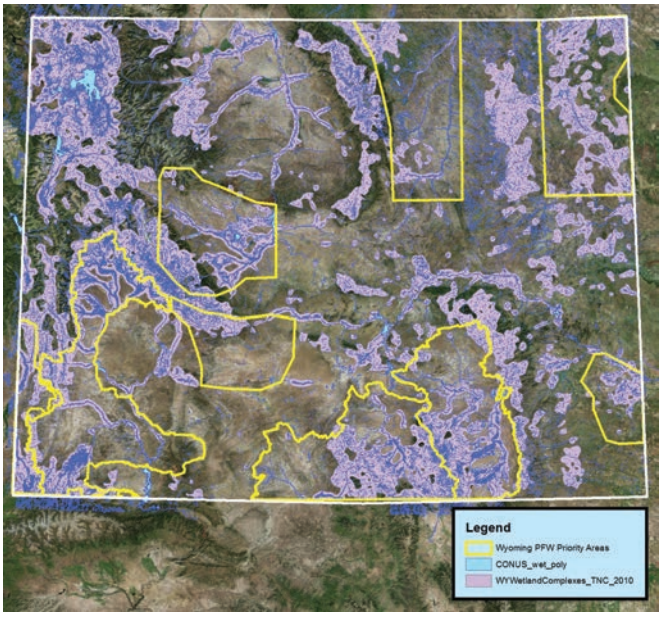


Figure 2. Wetland habitats and Wyoming PFW program Focus Areas.

important wetland, riparian and riverine resources (Table 2). Overall, these areas are relatively intact landscapes containing important natural resources that provide high ecological values and ecosystem function.

Wyoming PFW (WY PFW) concentrates its private land conservation efforts on priority species and habitats in geographic focus areas. One such keystone species is the greater sage-grouse. Wyoming is home to about 37% of all known greater sage-grouse. Numerous conservation efforts have been catalyzed around this species and the WY PFW Focus Areas include substantial portions of the highest density breeding areas for greater sage-grouse (Fig. 1). Core areas are the state's highest priority areas for sage-grouse conservation and encompass 85% of known sage-grouse populations in Wyoming.

Historic settlement patterns largely determine current land use. Lands that have sparse human settlement are far more likely to be in public land status than are lands heavily settled. Western Wyoming counties contain as little as (~3%) private lands while eastern counties are more than 90% privately owned. The Green River Focus Area (approximately 49% private) overlays several counties containing approximately 25% private lands (Table 2). Inherently, western WY PFW focus areas also contain significant amounts of public lands often in a checkerboard fashion. PFW recognizes public land leases are integral and long-standing for most ranching operations as BLM provides private landowners with a legally recognized preference for the use of public land grazing privileges. Working with both key private landowners and public land management agencies, PFW has the ability to influence land use and management activities on both private and public lands at a landscape scale.

Wetland/riparian habitats are among the rarest habitat types in western North America as well as the most important for western wildlife species. Wetlands make up approximately 1.25 million acres or approximately 2% of the semi-arid state of Wyoming's surface area (Yuhas 2003). Chaney et al. (1990) observed that greater than 75 percent of terrestrial wildlife species in southeastern Wyoming are dependent on these types of habitats for a part or all of their lifecycle. The high density and diversity of wildlife within these habitats results from the availability of water and prey items, and from high vegetative density, diversity, and structure. PFW targeted private lands in Wyoming are disproportionally valuable for the wildlife habitat they provide, since most wetlands and streams are on private land. In fact, about 30% of the state is contained in PFW focus areas, while roughly 50% (687,000ac) of Wyoming's wetlands fall within designated focus areas (Fig. 2).

During the plan revision process, WY PFW sought input from internal and external stakeholders regarding, 1) project priorities, 2) focus areas and boundaries, 3) important species, 4) resource plans and available data sets, and 5) PFW staffing location and levels. Information considered while formulating WY PFW's Strategic plan and subsequent revisions was primarily gathered through established conservation partner working relationships, questionnaires and stakeholder meetings. Multiple opportunities for stakeholder input on the front end resulted in common support from our partnerships. We are grateful for the time, expertise and energy that our many partners and stakeholders provided to help us through this process. Since this has become a living document that is updated every 5 years, we will continue to welcome partner input

Energy development in Wyoming. USFWS photo.

as we implement this Strategic Plan.

Plans and initiatives considered for target species, focus areas, and project priorities.

- Wyoming State Wildlife Action and Strategic Habitat Plan
- Wyoming Landscape Conservation Initiative (WLCI)
- Wyoming Sage Grouse Core Area Strategy
- Service - A Plan for the Management of Fish and Wildlife Resources on the Wind River Reservation; The Status and Management of Waterfowl on the WRR (1982), A Plan for Wildlife Management on the WRR (1982) and Trumpeter Swan Re-introduction and Management WRR (2013)
- North American Waterfowl Management Plan
- U.S. Shorebird Conservation Plan
- North American Waterbird Conservation Plan
- Inter-mountain West Joint Venture (IWJV) Implementation Plan
- National Fish Habitat Action Plan (NFHAP)
- Service Refuge Comprehensive Conservation Plans

In addition, several landscape level planning processes and documents from our non-governmental partners were integrated when possible:

- Local Workgroup Priorities and Plans
- Coordinated Resource Management Plans
- UT, WY TNC Rocky Mountain Eco-regional Plan and Wyoming Basins Ecoregiona1 Plans (TNC)
- TNC's Bear River Conservation Action Plan
- Audubon – Important Bird Areas of Wyoming
- Ducks Unlimited, Inc, Wyoming: the Platte River and Rainwater Basin Initiative in the Southern Great Plains and the High Country Wetlands initiative in the Northern and Southern Rockies
- Western Native Trout Initiative – A Plan for Strategic Action

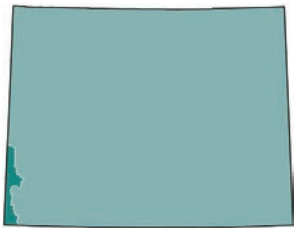
Generalized Threats/Opportunities

Wyoming has always had more acres than people, starting with emigrants passing through the "big desert" on their way to the coast. The 1870 census counted only 9,700 hearty souls willing to stay. The most recent 2015 census lists Wyoming as the least populated state (586,000 people). Potential long term isolation coupled with rugged landscapes, large livestock operations, and plenty of open

Habitat fragmentation resulting from energy development and urban sprawl. USFWS photos.

space has maintained rich fish and wildlife resources. However, similar to other western states, Wyoming's 1.3% annual population growth rate since 2000 is outpacing the United States' population growth rate as economics and the amenities of the American West attract increasing numbers of residents. Energy production is the largest component of Wyoming's economy. As of 2014, Wyoming is the primary producer of coal, fifth producer of natural gas, and eighth producer of crude oil in the United States (US Energy Information Administration). The BLM administers 40.7 million acres of federal mineral estates in Wyoming. About 13% of the state, or 8.2 million acres of federal minerals, is currently leased for oil and gas extraction (BLM 2014). Rural subdivision and energy infrastructure, including renewable energy, continue to change Wyoming's landscape and impact fish and wildlife habitat by conversion to other uses, fragmentation, and degradation.

Bear River Focus Area



The Bear River Focus Area encompasses about 791,000 acres, of which 46% is private land and 54% is public land. Wet meadow and willow-dominated habitats of the Bear River floodplain make up the heart of this area, while surrounding uplands are mostly comprised of sagebrush and foothills shrublands. The private lands within this focus area are part of the Bear River Watershed Conservation Area, a unit of the National Wildlife Refuge System that seeks to acquire voluntary conservation easements from private landowners, in recognition of the area's valuable habitat for fish and wildlife. The focus area hosts at least 67 state Species of Greater Conservation Need (SGCN), as well as numerous other more common fish and wildlife species.

The southwest Wyoming focus areas are located in the Wyoming Basin, the largest intact sagebrush landscape in North America. This habitat is characterized especially by the presence of big sagebrush, a plant species essential to the survival of much of the area's wildlife. A healthy sagebrush community is also composed of other shrubs, grasses, and forbs that provide additional

PFW program wetland restoration project, Bear River Focus Area, Wyoming. Photo by David Kimble, USFWS.

Bear River Focus Area sagebrush habitat, Wyoming. Photo by David Kimble, USFWS.

food and cover for wildlife. WY PFW projects in the sagebrush habitat seek to promote a healthy interspersion of sagebrush, other shrubs, grasses, and forbs to meet the habitat needs of native wildlife. Project types include ranch infrastructure such as fences and water developments to facilitate livestock management and vegetative treatments. Focal species targeted to benefit from sagebrush habitat projects in the Bear River Focus Area include greater sage-grouse and pygmy rabbit. Approximately 32% of this focus area overlaps with greater sage-grouse core area.

Mountain snowmelt from the Uinta Mountains and southern portions of the Wyoming Range is the life-blood of the aquatic habitats of the Bear River Focus Area. Streams provide habitat for native fish and cottonwood, willow, and sedge plant communities of riparian zones provide habitat for numerous wildlife species. A notable species is the Bonneville cutthroat trout, native only to tributaries of the Great Salt Lake. Other focal species include northern leatherside chub and yellow-billed cuckoo (federally threatened). Focus area projects in streams include removing fish passage barriers, preventing fish entrainment into irrigation canals, and improving stream stability and habitat with natural channel design structures. WY PFW seeks to improve riparian zone habitat through tree/shrub planting and adding necessary ranch infrastructure to facilitate livestock grazing management in riparian areas.

Streamflows are also essential for irrigated hay production, a practice which has created and maintained many wetlands. A complex of over 44,000 acres of wetlands in the Bear River Focus Area has been identified by the Wyoming Bird Habitat Conservation Partnership and others as high-priority for conservation. These wetlands, which include natural wetlands and those maintained by flood-irrigation practices, provide breeding and migratory habitat for a diversity and abundance of waterfowl, shorebirds, and other waterbirds. The Bear River Focus Area is particularly important for wetland wildlife due to its proximity and connectivity to the continentally-important wetlands of the Great Salt Lake. Wetlands on Cokeville Meadows National Wildlife Refuge and surrounding private lands host a spring breeding duck pair density of 76.4 per square mile (WGFD 1987), which is comparable to much of the better habitat of the Prairie Pothole Region of the Dakotas.

Focal species include white-faced ibis, greater sandhill crane, northern pintail, cinnamon teal, redhead, and American bittern. WY PFW seeks to encourage long-term preservation of flood-irrigated wetlands by repairing and improving infrastructure such as dikes and water-control structures. We also seek to restore historic wetlands and create new wetlands where there are opportunities and suitable sites.

Bear River Focus Overlapping Priorities

- Sagebrush Ecosystem
- Bear River Watershed
- Native Salmonids

Willet within the Bear River Focus Area, Wyoming. Photo by David Kimble, USFWS.

Bear River Focus Area Focal Species

- Greater sage-grouse
- Pygmy rabbit
- White-faced ibis
- Greater sandhill crane
- Northern pintail
- Redhead
- American bittern
- Yellow-billed cuckoo (Threatened)
- Bonneville cutthroat trout
- Northern leatherside chub

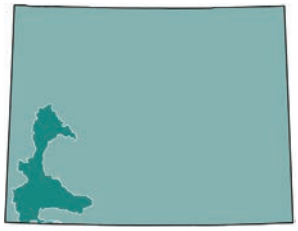
Bear River Focus Area Habitat Targets

- Upland (sagebrush/aspen) Enhancement: 4,000 acres
- Wetland Restoration/Enhancement: 500 acres
- Riparian Enhancement: 5 mi
- Stream Restoration: 12,000 ft
- Fish Passage Structures: 8 units

Bear River Focus Area Partnership Targets

- Private Landowner Agreements: 15
- Partnerships: 180
- Technical Assistance: 75 staff days
- Percent Leveraging: 1:4 Service to partner dollars

Upper Green River Focus Area



The Green River Focus Area encompasses 3.98 million acres, 49% of which is private land. This focus area has been significantly enlarged since our previous strategic plan to correspond with the Service and its partners' strong emphasis on landscape conservation in the entire Green River watershed. It is a biologically diverse and complex area, ranging from the conifer-aspen forest interface at the highest elevations to the cottonwood-willow and aquatic habitats of the Green River just above Flaming Gorge Reservoir. The State of Wyoming has identified at least 79 SGCN that reside in the focus area.

Quaking aspen are considered a keystone plant species due to the high quality wildlife forage they provide, the conditions they provide for the establishment of other plants, and the number of wildlife species that depend on them for most of their habitat needs, including many federal trust migratory bird species. However, aspen coverage in the West has declined substantially over the past 100–150 years, with most estimates of the decline varying from 50%–90%. Among other factors, a major cause of the decline is a lack of fire that causes shade tolerant conifers to gradually outcompete the aspen. The Green River Focus Area contains significant private land aspen habitats that can be managed with vegetative treatments or prescribed fire to perpetuate this important habitat. The red-naped sapsucker, among others, is a focal species dependent upon aspen habitats in the Green River Focus Area.

The longest known annual mule deer migration route exists in this focus area, from the Hoback River Basin to the Red Desert—a distance of 150 miles. Large, unfragmented landscapes are essential for long-distance mammal migrations and greater sage-grouse habitat alike. This focus area and our Upper Sweetwater Red Desert Focus Area encompass the heart of the Red Desert-Hoback mule deer migration corridor and Wyoming's Greater South Pass sage-grouse core area—the greatest concentration of sage-grouse breeding habitat in the world. Overall, 42% of the Green River Focus Area is a core area for greater sage-grouse. WY PFW project types in the Green River sagebrush include

Montane landscape within the Upper Green River Focus Area, Wyoming. Photo by David Kimble, USFWS.

ranch infrastructure such as fences and water developments to facilitate livestock management and vegetative treatments. The projects work in concert with other efforts of our conservation partners to maintain an intact landscape.

USDA and several private land trusts have been very successful at working in this area to secure conservation easements from willing private landowners that maintain open space and wildlife habitats. Focal species that benefit from WY PFW sagebrush habitat projects in the Green River Focus Area include greater sage-grouse, pygmy rabbit, and golden eagle. Extensive ribbons of riparian

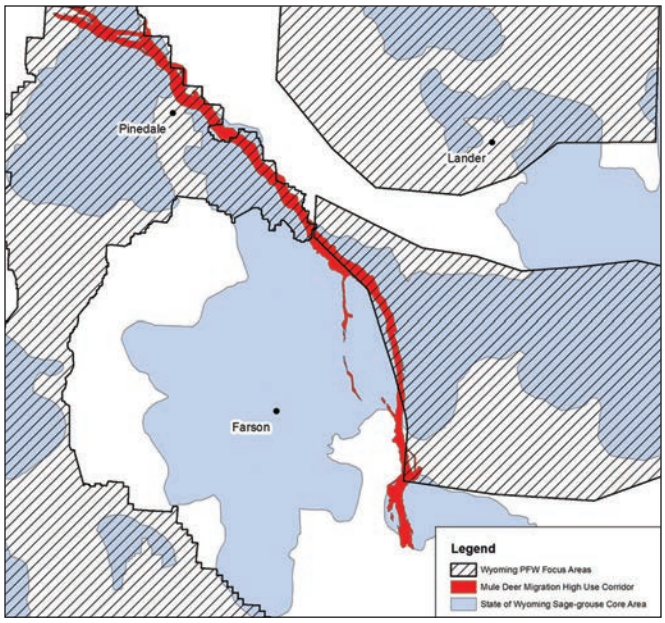


Figure 3. Wyoming PFW focus areas align with the Red Desert to Hoback Basin mule deer migration route and Wyoming greater sage-grouse core areas.

Upper Green River wetland complex. USFWS photo.

Wyoming PFW-restored wetland, Upper Green River Focus Area. USFWS photo.

Grazing management system to enhance wet meadow habitat for late season greater sage-grouse brood rearing. Photo by David Kimble, USFWS.

habitats exist along the Green and New Fork Rivers and their tributaries, providing important multi-layered vegetative structure for migrating and resident riparian birds and other wildlife. Yellow-billed cuckoo and willow flycatcher are PFW focal species that utilize this habitat in the focus area. The WY PFW program seeks to improve riparian zone habitat through tree/shrub planting and adding necessary ranch infrastructure to facilitate livestock grazing management in riparian areas. The streams and rivers that flow through these riparian habitats are home to priority native fish species such as Colorado River cutthroat trout and flannelmouth sucker. WY PFW projects in streams include removing fish passage barriers, preventing fish entrainment into irrigation canals, and improving stream stability and habitat with natural channel design structures.

About 30% of this focus area is comprised of the Green River Basin wetland complex, identified by the Wyoming Bird Habitat Conservation Partnership as high priority for conservation. This focus area contains a diverse mix of about 260,000 acres of natural and flood-irrigation created wetlands. The glacially formed potholes and lakes in the north are unique for the state and contain the highest breeding density of diving ducks in Wyoming, including lesser scaup. Flood-irrigated wetlands in parts of the focus area also provide exceptional habitat for the long-billed curlew. The Green River Focus Area also contains an important breeding range expansion area for the Rocky Mountain sub-population of trumpeter swans (WBHCP 2014). WY PFW wetland projects in the focus area include restoring historic drained wetlands, repairing or improving flood-irrigation infrastructure in key wetland areas, and creating new wetlands on environmentally and economically appropriate sites.

Upper Green River Focus Area Overlapping Priorities

- Sagebrush Ecosystem
- Colorado River Native Fishes
- Native Salmonids

Upper Green River Focus Area Focal Species

- TruSpeter swan
- Lesser scaup
- Long-billed curlew
- Greater sage-grouse
- Golden eagle
- Willow flycatcher
- Colorado River cutthroat trout
- Pygmy rabbit
- Flannelmouth sucker
- Yellow-billed cuckoo (Threatened)
- Red-naped sapsucker

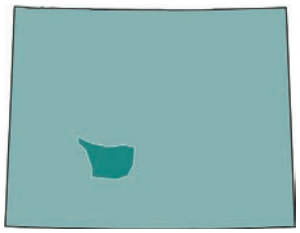
Upper Green River Focus Area Habitat Targets

- Upland (sagebrush/aspen) Enhancement: 25,000 acres
- Wetland Restoration/Enhancement: 75 acres
- Riparian Enhancement: 5 mi
- Stream Restoration: 15,000 ft
- Fish Passage Structures: 5 units

Upper Green River Focus Area Partnership Goals

- Private Landowner Agreements: 15
- Partnerships: 180
- Technical Assistance: 75 staff days
- Percent Leveraging: 1:4 Service to partner dollars

Upper Sweetwater – Red Desert Focus Area



The 1.52 million acre Upper Sweetwater River – Red Desert Focus Area is a high elevation desert characterized by sagebrush containing numerous playa wetlands, springs, ephemeral and perennial streams, and riparian corridors. With an elevation ranging from approximately 5,000– 9,500 ft (1,524–2,896 m), the Red Desert is the highest desert in North America. It is also one of the largest unfenced regions in the continental United States benefiting many resident migratory animals like antelope, mule deer and sage-grouse. Winter range for the longest mule deer migration, the largest migratory herd of pronghorn in the lower 48 states and the world's largest desert elk herd inhabit the region (NWF 1996–2012). Public lands (~95%) dominate this intact landscape, home to many familiar sagebrush birds including golden eagle, ferruginous hawk, prairie falcon, greater sage-grouse, mountain plover, sage sparrow, and Brewer's sparrow. Approximately 65% or 988,000 acres of this focus area is considered "core sage-grouse area" containing one of the highest concentrations and important strongholds of greater sage-grouse in the nation.

As biologically important as this area is, few protections exist. For more than a century, individuals and conservation organizations have recognized the unique values of the Red Desert and have moved to protect them. During 1898, Wyoming hunters tried to designate much of the Red Desert

Continental Peak, Upper Sweetwater River Basin. USFWS photo.

Sagebrush of the Red Desert. USFWS photo.

as a Winter Game Preserve due to the high numbers of pronghorn and desert elk that inhabit the area. During 1935, Wyoming Gov. Leslie Miller tried to designate part of the area as a national park and more recently several citizen-driven wilderness efforts have been attempted. The greater conservation community is holding their breath as energy development continues to work the periphery of the Red Desert.

Primary land use is livestock grazing within a landscape that contains few impediments to migratory wildlife. However, the lack of fencing leaves landowners and land mangers little control over grazing patterns. During the warm summer month's livestock migrate off the large expanse of uplands and spend a significant amount of time around permanent water sources such as riparian corridors, wet meadows, and playa lakes. Much of the PFW program work has concentrated on grazing management infrastructure to provide greater operational flexibility for landowners while minimizing the influence of fencing on migratory resident wildlife.

Upper Sweet Water – Red Desert Focus Area Overlapping Priorities

- Sagebrush Ecosystem

Upper Sweet Water – Red Desert Focus Area Focal Species

- Greater sage-grouse
- Meadow pussytoes
- Willow flycatcher
- American avocet
- Wilson's phalarope
- Golden eagle

Upper Sweet Water – Red Desert Focus Area Habitat Targets

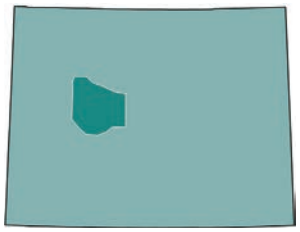
- Upland (sagebrush/aspen) Enhancement: 5,000 acres
- Wetland Restoration/Enhancement: 50 acres
- Riparian Enhancement: 10 mi
- Stream Restoration: 5,000 ft
- Fish Passage Structures: 1 unit

Upper Sweet Water – Red Desert Focus Area Partnership Targets

- Private Landowner Agreements: 5
- Partnerships: 60
- Technical Assistance: 45 staff days
- Percent Leveraging: 1:4 Service to partner dollars

Wind River Peak Glacier. USFWS photo.

Wind River Focus Area



The Wind River Range contains 63 glaciers making it the largest concentration of glaciers in the American Rocky Mountains. Glaciers serve as repositories of water contributing significantly to regional hydrologic regimes. The melt water from these glaciers provides late season flows for over 3,000 miles of low elevation perennial streams. As a result, the basin is one of the leading agricultural regions in the state with more than 260,000 acres of irrigated crop and hay lands. Sagebrush and grassland make up the majority of the area at 1.7 million acres with livestock production being the primary land use in the valley. Of the total land base in this priority area, tribal lands make up 63%, private 27% and public 10%.

The heart of the focus area is the 2.1 million acre Wind River Reservation (WRR) which owes its intactness to the fact that cultural and traditional uses are important and 85% is still in tribal ownership. In fact, some 30 years before the passing of the Wilderness Act, WRR Tribes designated almost 200,000 acres of roadless area in the 1930's due to urging from a frequent visitor, wilderness activist Bob Marshall. In 1998, a Memorandum of Understanding (MOU) was signed between the Service, Eastern Shoshone and Northern Arapaho Tribes (Tribes) to jointly work on habitat projects for tribal designated fish and wildlife species of cultural importance. The Tribes have identified an extensive number of culturally significant fish and wildlife species covering a broad spectrum of habitat types. The protected nature of the landscape and shear ruggedness contributes to the areas wildness with a full complement of North Americas largest carnivores including grizzly bears, wolves, lynx, and recently discovered wolverines. The focus area is also home to 78 state designated SGCN.

The Wind River Focus Area watershed contains three distinct wetland areas, valley floor, extended foothills and glaciated montane regions connected by a corridor of riverine habitat. The complex serves as a winter stop

Grizzly Bear in the Wind River Basin, Wyoming. USFWS photo.

Valley wetlands provide an important stopover until montane lakes and wetlands open with spring thaw. USFWS photo.

over location, seasonal migration route, and regionally important breeding ground for waterfowl, waterbirds, and numerous other avian species. Shaped primarily by glaciation, the mountains contain high elevation lakes, ponds and wetlands that provide breeding habitat for waterfowl including ring-necked ducks, lesser scaup, and bufflehead. The valley floor holds 43,618 acres of palustrine emergent wetlands, either associated with river floodplains, flood irrigation wastewater or wind blown depressions.

In 2013, the WRR Tribes in partnership with the Service and several key conservation organizations worked together to re-establish trumpeter swans within the valley. Sufficient quantity and quality habitat now exists for these efforts to continue until a minimum of 7 breeding pairs are established in the valley.

In general, most intact native fish assemblages reside in fragmented populations or are constricted to headwater environments where public ownership and relative inaccessibility have moderated detrimental impacts. Throughout the West, there are a number of reasons for declining native fish populations including, non-native introductions, habitat degradation, dewatering, entrainment and fish barriers impeding migration. Assessments have been completed that help target important streams for restoration. Conservation partners' efforts have concentrated on creating connectivity and migration pathways to allow lifecycle completion as well as provide resiliency to changing habitat conditions. Creating conservation populations of native fishes through the restoration of isolated streams is a project growth area for WRR.

High elevation desert, Wind River Reservation. USFWS photo.

Wind River Reservation Ray Canal rotating vertical fish screen (left) and fish ladder prevents fish entrainment and provides passage past irrigation diversion. USFWS photos.

Wind River Focus Area Focal Species

- Greater sage-grouse
- Trumpeter swan
- American avocet
- Wilson's phalarope
- Yellowstone cutthroat trout
- Ling
- Sauger
- Gray wolf
- Grizzly bear
- Bald eagle

Wind River Focus Area Overlapping Priorities

- Sagebrush Ecosystem
- Native Salmonids

Wind River Focus Area Habitat Targets

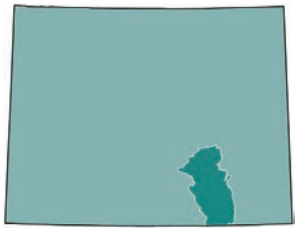
- Upland (sagebrush/aspen) Enhancement: 10,000 acres
- Wetland Restoration/Enhancement: 200 acres
- Riparian Enhancement: 10 mi
- Stream Restoration: 10,000 ft
- Fish Passage Structures: 2 units

Wind River Focus Area Partnership Targets

- Private Landowners Agreements: 12
- Partnerships: 144
- Technical Assistance: 100 staff days
- Percent Leveraging: 1:5 Service to partners dollars

Wind River Reservation honor students assisting with a trumpeter swan release (left). Trumpeter swan cygnets released at Alkali Lake, a PFW restoration project. USFWS photos.

Laramie Plains Focus Area



Located on the eastern edge of the Wyoming Basin physiographic region, Laramie Plains Focus Area is cradled between the Shirley, Laramie and Medicine Bow mountains and contains three sub-basins (Laramie, Hanna and Shirley; Fig. 4). The focus area encompasses 2.78 million acres characterized by isolated mountains, buttes, and river valleys interspersed with the sagebrush-grasslands, mixed grass prairie, greasewood and saltbush flats, aspen and pine. With the exception of a rather small percentage (~4%) of land in cultivation along floodplains, most of the landscape is intact with ranching as the dominant land use. Well-known for its "plains lakes", the area contains more than 120,000 acres of alkali and freshwater depressions with the heaviest concentration in the southern third of the focus area. Wetland hydrology is more permanent in southern portions of the focus area benefitting from irrigation and irrigation return flows.

Mortenson Lake, Hutton Lake, and Bamforth National Wildlife Refuges are all a part of the wind-blown landscape of southern Laramie Plains. A unique erosional feature called the Big Hollow is a large elongated depression that contains Mortenson and Hutton Lake National Wildlife Refuges. Hutton Lake and Bamforth were established under the Migratory Bird Conservation Act while Mortenson Lake came to existence under the Endangered Species Act for protection of the federally endangered Wyoming toad. Extirpated from its historic range by the early 1990's, the last remaining wild toads were brought into captivity during 1994. Thanks to captive breeding efforts, Wyoming toads are being reintroduced back into the wild. With an umbrella Safe Harbor Agreement in place, habitat restoration on private lands has been utilized for a source of new reintroduction sites.

The vast expanse of un-fragmented mixed grass and sagebrush habitat of the Laramie Plains Focus Area offers an enormous conservation opportunity, especially for the management and protection of greater sage-grouse and sage dependent bird species like the sage thrasher, sage sparrow and the Brewer's sparrow. One of the best ways to help the largest number of native species in this focus area is to help maintain or improve sagebrush/grassland, wetland and riparian habitats. As area ranches continue to transition from sheep operations to cattle, WY PFW is working with landowners to establish grazing management plans, implement much needed infrastructure such as interior fencing and water developments to provide operational flexibility in managing rangelands and accompanying riparian and wetland habitats.

Figure 4. Basin Topography (Knight et al. 1976).

Plains Lake, Laramie Plains Focus Area. USFWS photo.

Wyoming toadlet ready for release (left) on a PFW wetland restoration site. Photos by Mindy Meade, USFWS.

Laramie Plains Focus Area Focal Species

- Wyoming toad (Endangered)
- Greater sage-grouse
- Mountain plover
- Ferruginous hawk
- Black-footed ferret (Endangered)
- Preble's meadow jumping mouse (Threatened)
- McCown's longspur
- Lesser scaup
- American avocet

Laramie Plains Focus Area Habitat Targets

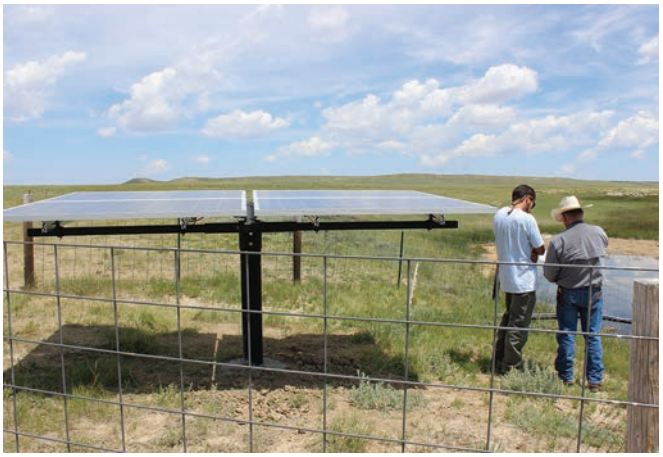
- Upland (sagebrush/aspen) Enhancement: 10,000 acres
- Wetland Restoration/Enhancement: 200 acres
- Riparian Enhancement: 10 mi
- Stream Restoration: 10,000 ft
- Fish Passage Structures: 2 units

Laramie Plains Focus Area Partnership Targets

- Private Landowner Agreements: 12
- Partnership: 144
- Technical Assistance: 50 staff days
- Percent Leveraging: 1:5 Service to partner dollars

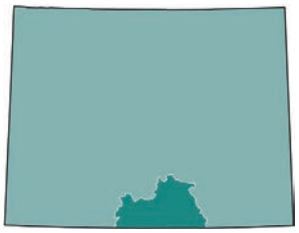
Laramie Plains Focus Area Overlapping Priorities

- Sagebrush Ecosystem
- Grassland Migratory Birds



PFW partners-funded water development (left) and a riparian fence. Photos by Mindy Meade, USFWS.

Little Snake River – Upper North Platte Focus Area



The Little Snake River – Upper North Platte Focus Area lies within an ecological transition point between the Southern and the Northern Rocky Mountains. This focus area contains the Sierra Madres (maximum elevation is 10,000 ft) which is recognized for its diverse plant communities that include aspen, mixed mountain shrub, sagebrush, Gambel's oak, and conifer plant communities. The Little Snake and the Upper Platte Rivers, the two dominate river systems are lined with mature cottonwood galleries. Sloping to the west is a high elevation desert (6,000 ft elevation) which consists of an extensive ridge and basin system with outcrops of sandstones, clays, and shales. Lower elevation ridges are frequently covered with a mosaic of juniper woodland that transition to mesic upland scrub plant communities. Private lands (30%) within this focus area are typically intermixed in a checker-board fashion with federal (64%) and state lands (6%). This co-mingling of land ownership necessitates strong working relations with a variety of partners.

Unique to this area, its the northern extent of the Gamble oak plant commnunity common to lower montane area of the southern rockies. It contains the only known breeding population of Columbian sharp-tailed grouse in Wyoming which overlaps greater sage-grouse habitat. Thirty-nine percent of the Columbia sharp-tailed grouse range lies within lands that are privately owned. In addition, the focus area is very important for numerous SGCN as identified by the Wyoming Game and Fish Department, including seven species of fish, four species of amphibians, two reptile species, seventeen bird species, eleven bat species, and nine mammal species.

An extensive network of oxbow lakes and backwater sloughs along the major river corridors serve as important areas for breeding and migratory birds. A preliminary reconnaissance report conducted in the early 1960's by the Service identified this as an important waterfowl area with the recommendation for wetland acquisition. Harry B. Crandell, Wildlife Biologist, "This is a very good area and we should try our best to get something for waterfowl here."

Since 1999, WY PFW has been working intensively with its conservation partners in the Little Snake River watershed to pursue a true watershed approach to habitat restoration, aquatic and terrestrial. WY PFW program efforts will continue to focus on providing fish passage, maintaining in-stream flows, and habitat improvement for both cold water Colorado cutthroat trout, and cool water species of concern, like bluehead sucker, flannelmouth sucker, and roundtail chub. Wetland and upland projects place heavy emphasis on providing breeding and migratory habitat for several federal trust avian species.

Little Snake River – Upper North Platte Focus Area Overlapping Priorities

- Sagebrush Ecosystem
- Native Salmonids

Wyoming PFW program staff develop grazing management systems to enhance wildlife habitat. Photo by Mindy Meade, USFWS.

Riparian fencing used to enhance a cottonwood gallery forest along the Upper North Platte River, Wyoming. Photo by Mindy Meade, USFWS.

Little Snake River – Upper North Platte Focus Area Focal Species

- Greater sage-grouse
- Columbian sharp-tailed grouse
- Sage thrasher
- Lesser scaup
- American avocet
- Colorado cutthroat trout
- Bluehead sucker
- Flannelmouth sucker
- Roundtail chub

Little Snake River – Upper North Platte Focus Area Habitat Targets

- Upland (sagebrush/aspen) Enhancement: 10,000 acres
- Wetland Restoration/Enhancement: 30 acres
- Riparian Enhancement: 15 mi
- Stream Restoration: 10,000 ft
- Fish Passage Structures: 2 units

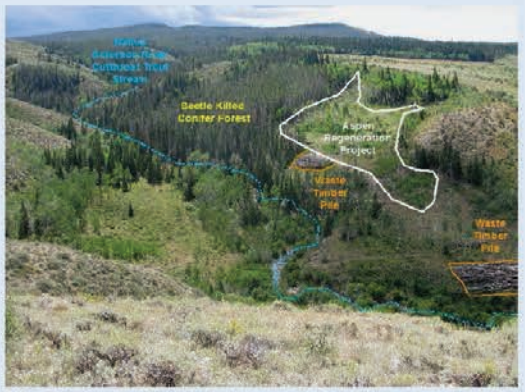
Little Snake River – Upper North Platte Focus Area Partnership Targets

- Private Landowner Agreements: 16
- Partnerships: 192
- Technical Assistance: 50 staff days
- Percent Leveraging: 1:6 Service to partner dollars

Toe-wood and rock vane structure installed on the Little Snake River. Photos by Mindy Meade, USFWS.

Little Snake River Watershed: a story of beetle killed coniferous forests, aspen regeneration, and in-stream habitat enhancements

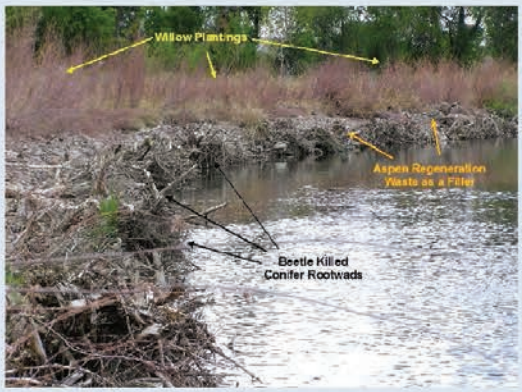
Little Snake River Watershed is one of Wyoming's best examples of watershed or landscape level restoration. For more than a decade, numerous conservation interests were brought together by the local Little Snake River Conservation District to address the health of this 250,000 acre watershed. The dominant land use of the watershed is ranching anchored in small rural communities. To have success, habitat conservation must work hand-in-hand with both to be accepted and sustainable. A project near the headwaters of the East Fork of Savery Creek demonstrates just how a naturally interconnected watershed can benefit top to bottom from a little human intervention.



Mixed private/public ownership with several ongoing projects

To set the stage, extensive conifer tree mortality from large insect and disease outbreaks is altering western montane ecological processes, with significant economic and social implications. For a period of time, large expanses of dead timber lead to diminished habitat quality and presented a significant threat of catastrophic wildlife fire to local forests, agricultural operations and surrounding communities. To help speed up plant succession and healing process, select clear cutting of dead stands and thinning of live stands was implemented throughout the watershed. Selective logging aided the recovery of a healthy mosaic of grass, shrub and forest improving habitats for a variety of fish and wildlife species, including Cassin's finch and Columbian sharptail grouse as well as improving surface and groundwater flows to local streams benefitting native fishes like Colorado cutthroat trout. In addition, salvaged marketable timber helped diversify the financial portfolio for landowners which support their local economy.

Lower in the watershed, non-marketable timber, residual wood-slash, root balls from fallen beetle kill trees, or undesirable wood species, was put to use restoring reaches of the Little Snake River and its tributaries.

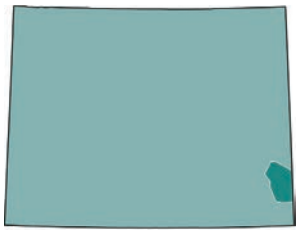


Amphibian habitat - oxbow restoration.

Woody material harvested in the upper watershed integrated into river restoration project in the lower watershed.

Diverse habitats and land uses occur throughout the Goshen Hole Focus Area, Goshen County, Wyoming. USFWS photo.

Goshen Hole Focus Area



Goshen Hole is a great widening of the North Platte Valley defined by a 400-500 ft escarpment (Goshen Rim) to the west and south. Ranging from 4,000-4,600 ft above sea level it's among the lowest elevations in Wyoming. A part of the Great Plains, the land ranges from undulating to rolling with mostly short- and mid-grasses. Goshen Hole has a land area of 855,000 acres, predominantly privately owned lands (approximately 92%) of which 15 % is used for irrigated cropland, 15% for dry land cropland, and 60% rangeland. The 12,000 wetland acres that make up the Goshen Wetlands Complex also includes the alluvial floodplain of the lower North Platte River.

Farmland is concentrated at the center of the focus area which also contains the highest wetland densities. These interior wetlands often rely on supplemental water from irrigation return flows to provide consistent water for added management capabilities. However, not having a mountain watershed as a primary water source, the lack of late seasonal water often limits water availability for wetlands and subjects them to greater seasonal variations. From the Wyoming-Nebraska state line upstream to the Goshen-Platte county line, the alluvial floodplain of the lower North Platte River contains significant backwater areas and oxbow wetlands.

The grasslands of eastern Wyoming are classified as either shortgrass or mixed-grass prairie. Mixed-grass prairie is common across much of eastern Wyoming while shortgrass prairie is restricted to the southeast corner. Wyoming once represented the western periphery for many grassland species. Intensive conversion of grassland outside of Wyoming and relative intactness of the state's grasslands now makes the Great Plains portion of Wyoming the core of many grassland species distributions.

Eastern Wyoming grasslands and wetlands are also an important migration corridor and stopover habitat for many avian species. Goshen Wetlands Complex has been identified as one of nine priority complexes for waterfowl and waterbirds which warrants increased conservation attention (WY Joint Ventures Steering Committee 2010). PFW program emphasis has been on restoring wetland and adjacent shortgrass upland habitats for an assortment of ground nesting species, including mountain plovers, McCown's longspur, bobolinks and a variety of waterfowl. This is one of three unstaffed focus areas.

Goshen Hole Focus Area Overlapping Priorities

- Grassland Migratory Birds

Goshen Hole Focus Area Focal Species

- Northern pintail
- Lesser scaup
- American avocet
- Wilson's phalarope
- Mountain plover
- Long-billed curlew
- McCown's longspur
- Prebles's meadow jumping mouse (Threatened)

Goshen Hole Focus Area Habitat Targets

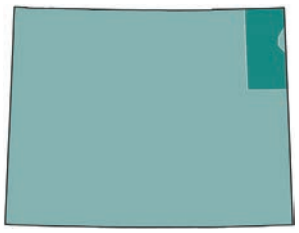
- Upland (sagebrush/aspen) Enhancement: 500 acres
- Wetland Restoration/Enhancement: 20 acres
- Riparian Enhancement: 1 mi
- Stream Restoration: 0 ft
- Fish Passage Structures: 0 units

Goshen Hole Focus Area Partnership Targets

- Private Landowner Agreements: 3
- Partnerships: 36
- Technical Assistance: 3 staff days
- Percent Leveraging: 1:3 Service to partner dollars

Arial images of a restored backwater slough completed to benefit waterfowl and native prairie fishes. USFWS photos.

Black Hills Mixed-Grass Focus Area



Taking in portions of Crook and Weston counties, Black Hills Mixed-Grass Focus Area contains forest edge periphery grasslands and sagebrush around the Black Hills. Connecting these habitats is more than 6,500 miles of riverine habitat and 14,000 acres of woody riparian habitats within BHMG focus area. The southern extent includes a small segment of the Thunder Basin National Grasslands, known for ferruginous hawks, swift fox, greater sage-grouse and black-tailed prairie dogs. The black-tailed prairie dog is particularly important in this area for its role building burrows and cropping vegetation that creates habitats of sparse grasslands for other species such as burrowing owls, mountain plovers and Sprague's pipit. Others, such as the Ferruginous Hawk, prey upon prairie dogs. Some of these species like the mountain plover will also use heavily grazed, previously disturbed, or tilled land. Many of these grassland birds like the long-billed curlew migrate from as far away as Mexico and South America to spend part of each year in the focus area. Important prairie grassland areas have been identified in the Wyoming State Wildlife Action Plan that help guide coordination among partners in delivering funding to these sites (Fig. 5).

This focus area contains 680,000 acres of greater sage-grouse core area with connectivity areas, most of which are privately owned (approximately 77%). Most leks in northeast Wyoming are small with less than 20 males observed during the peak male count. Since 1995, northeast Wyoming has the lowest average peak male lek attendance in the state, averaging 9 males per active lek in 2013 compared to the statewide average of 17 males per active lek. Additional insight into the northeast Wyoming greater sage-grouse population can be gained by tracking the percentage and number of active and inactive leks. Unfortunately, both have decreased significantly, suggesting a notable decrease in population (NE Sage Grouse Working Group).

The Conservation Objective Team (COT; Service 2013) listed energy development, infrastructure, improper livestock and/or wildlife grazing practices, weeds and

Black Hills Mixed-Grass Focus Area, Wyoming. USFWS photo.

Greater sage-grouse brood in northeastern Wyoming. USFWS photo.

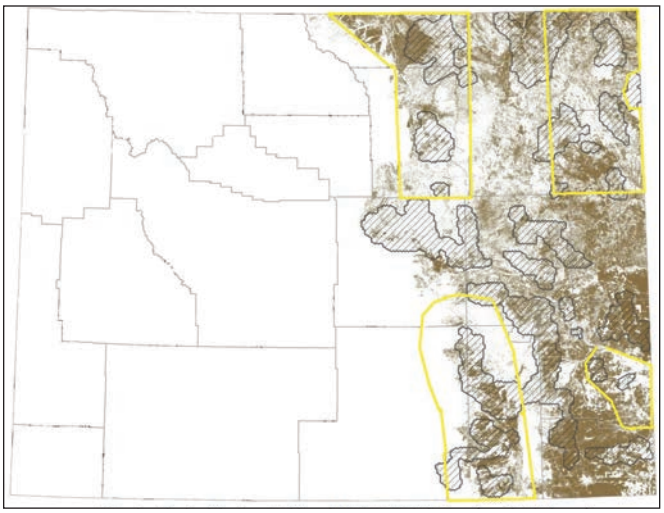


Figure 5. Wyoming Great Plains Grasslands with Species of Greatest Conservation Need (SGCN) Priority Areas (cross-hatched areas) and eastern Wyoming PFW program focus areas. USFWS map.

annual grasses, mining and recreation as broadscale threats to greater sage-grouse in the Powder River Basin. PFW efforts have concentrated on grassland/sagebrush and riparian habitats in the form of livestock fencing, water developments, and grazing management plans. Water developments include constructing multi-purpose wetlands, water gaps, wells, pipelines, and water troughs. The Black Hills Mixed-Grass Focus Area is one of three unstaffed focus areas in Wyoming.

PFW habitat efforts align well with the general conservation objective identified by the COT:

- Stop population declines and habitat loss.
- Implement targeted habitat management and restoration.
- Develop and implement state and federal sage-grouse conservation strategies and associated incentive-based conservation actions and regulatory mechanisms.

Black Hills Mixed-Grass Focus Area Overlapping Priorities

- Sagebrush Ecosystem
- Grassland Migratory Birds

Black Hills Mixed-Grass Focus Area Focal Species

- Greater sage-grouse
- Mountain plover
- Black-tailed prairie dog
- Burrowing owl
- Long-billed curlew
- Northern pintail
- Wilson's phalarope

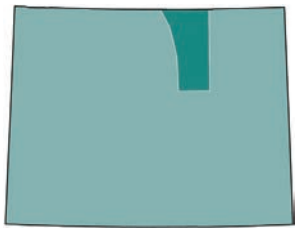
Black Hills Mixed-Grass Focus Area Habitat Targets

- Upland (sagebrush/aspen) Enhancement: 2,500 acres
- Wetland Restoration/Enhancement: 50 acres
- Riparian Enhancement: 3 mi
- Stream Restoration: 0 ft
- Fish Passage Structures: 0 units

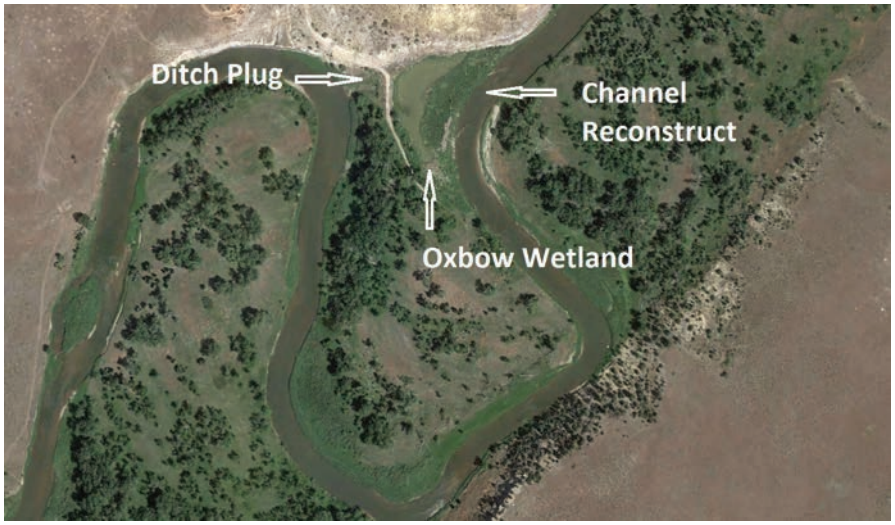
Black Hills Mixed-Grass Focus Area Partnership Targets

- Private Landowner Agreements: 5
- Partnerships: 60
- Technical Assistance: 8 staff days
- Percent Leveraging: 1:3 Service to partner dollars

Powder-Tongue River Focus Area

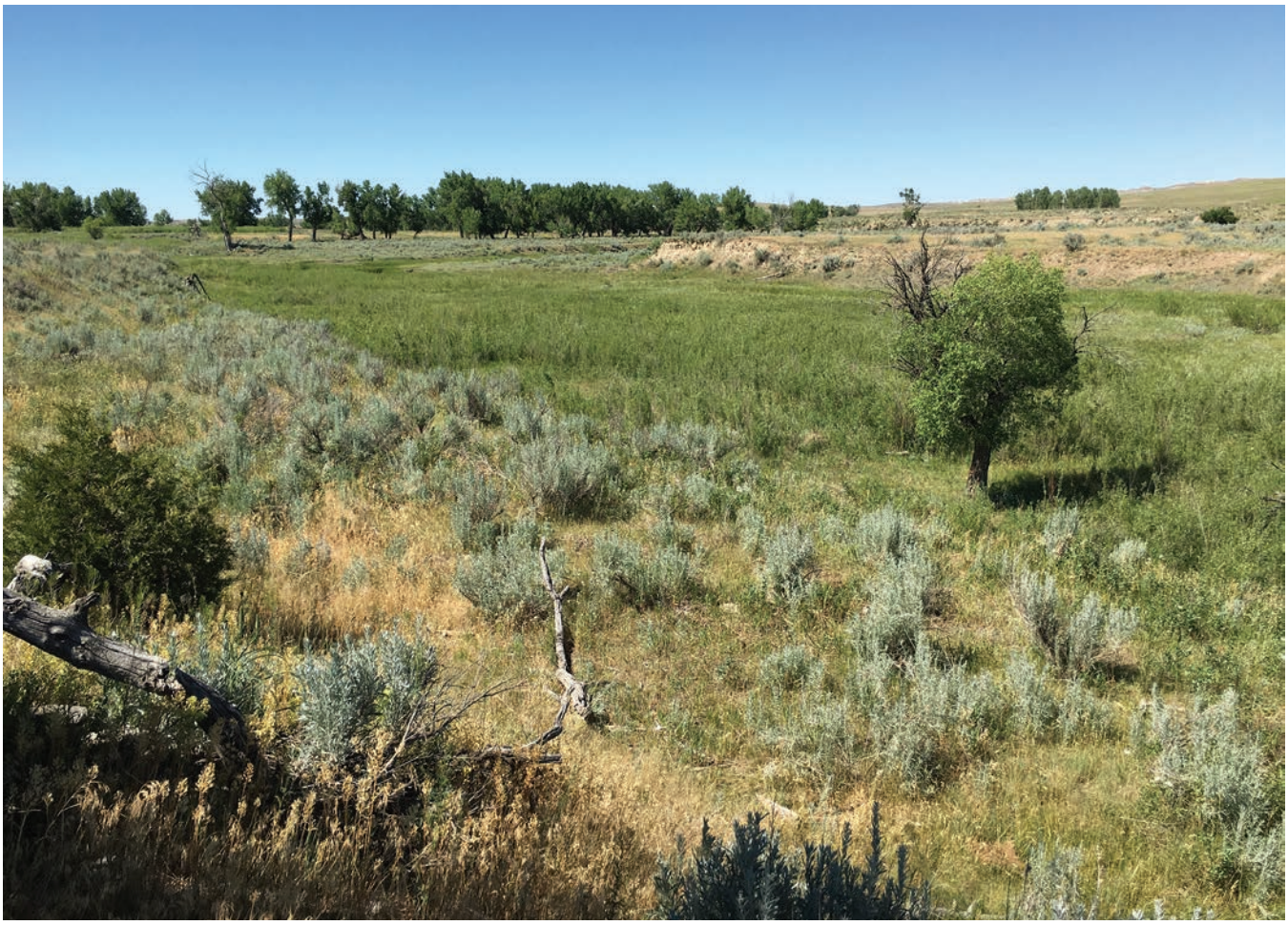


Starting at the eastern slope of the Big Horn Mountains and extending to the Powder River, this focus area receives considerably more summertime precipitation and more closely resembles the southern Rockies in vegetative land cover. Mixed-grass and sagebrush make up more than 92% of the area and roughly 80% is in private ownership. Vegetation communities within the Powder River Basin are naturally fragmented, as they represent a transition between the intermountain basin sagebrush communities to the west and the prairie communities to the east. The Powder River Basin is also near the eastern edge of greater sage-grouse range. Wetlands are commonly found in association with floodplain and riparian habitats. As western rivers go, the Powder River is distinctive because it's not blocked by dams or irrigation diversions. The relative intact and unchanged nature of the Powder



Tongue River Stream Restoration, Wyoming. Restoration included moving the channel to its previous position and installation of a ditch plug/small dike with added floodplain features such as an oxbow wetland and woody debris to benefit native fish and amphibians. PFW and other conservation partners prevented further degradation of the channel and protected 5,000 ft of the Tongue River.

Completed bank-full bench (left) and high-water over bankfull bench, Tongue River, Wyoming. USFWS photos.



Willow regeneration along the Little Powder River, Wyoming. USFWS photo.

River provides habitat for unique fish species like the sturgeon chub and western silvery minnow adapted to high turbidity and low summertime flows. As the Great Plains ecosystem continues to be fragmented from land conversion and water projects, the remaining fragments are not large enough to support naturally-functioning watersheds (Dodds et al. 2004) leading to steep declines in distribution of many native prairie fishes. Those systems that persist require dedicated conservation efforts such as river restoration, fish passage and rangeland assistance to minimize rangeland conversion.

For northeast Wyoming, greater sage-grouse numbers have declined significantly and the long term trend continues to be a

Constructed bench, back water area and rock barb (left). High water over project area, Tongue River, Wyoming. USFWS photos.

A view of rugged breaks along Clear Creek and a PFW riparian fence and wetland restoration project. USFWS photo.

concern. The current decreasing trend is likely a combination of the cyclic nature of greater sage-grouse populations combined with documented influences from fire, land conversion, West Nile virus and energy development in the Powder River Basin (NE SG working group 2012). A sagebrush cover assessment within Powder River Basin estimated sagebrush coverage to be 35% with an average patch size less than 300 acres, representing a 63% decrease in patch size during the past forty years (Rowland et al. 2005). Most of the occupied greater sage-grouse habitat in the Powder River Basin is privately owned and contains approximately 70% of known leks (Northeast Wyoming Sage-grouse Working Group 2006).

Since 1998, WY PFW and its partners have concentrated habitat work on implementing an assortment of projects to improve the health of sagebrush communities, including livestock fencing, off-site water developments, and grazing management systems. In addition, fish passage, stream and oxbow slough restoration are the primary habitats of landowner interest.

Powder-Tongue River Focus Area Overlapping Priorities

- Sagebrush Ecosystem
- Grassland Migratory Birds
- Native Salmonids

Powder-Tongue River Focus Area Focal Species

- Greater sage-grouse
- Sage thrasher
- Bairds sparrow
- Northern pintail
- Wood duck
- Sandhill crane
- Yellowstone cutthroat trout

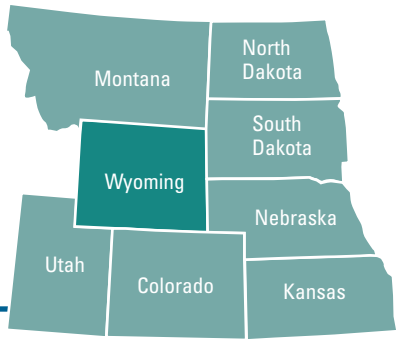
Powder-Tongue River Focus Area Habitat Targets

- Upland (sagebrush/aspen) Enhancement: 4,000 acres
- Wetland Restoration/Enhancement: 20 acres
- Riparian Enhancement: 6 mi
- Stream Restoration: 2,000 ft
- Fish Passage Structures: 1 unit

Powder-Tongue River Focus Area Partnership Targets

- Private Landowner Agreements: 5
- Partnerships: 60
- Technical Assistance: 5 staff days
- Percent Leveraging: 1:5 Service to partner dollars

Wyoming Statewide Goals



Broaden and Strengthen Partnerships

The sharing of restoration and partnership expertise between stakeholders is an important driver in the success of WY PFW restoration efforts. The working knowledge and technical expertise contributions of PFW staff continues to be an integral component in individual partnership project success as well as a restoration and conservation technique driver of change statewide. As new initiatives come on-line, shared positions have improved project coordination between the agencies at the field level, increased project initiation rates, as well as serving to bridge the gap between funding programs and partners. Being part of an office team, PFW staff make themselves available to local duty station and provide valuable biological input and technical expertise to the Uinta-Wasatch-Cache National Forest, Laramie NRCS/ Laramie Rivers Conservation District and Lander Fish and Wildlife Management Assistance Office.

Technical resource sharing has become commonplace among partners especially when significant gaps are identified. For example, a national priority shift to sagebrush landscapes necessitated an increase in capacity which was met by our conservation partners teaming together to place several jointly funded rangeland positions in key locations around the state. Partnership planning positions were established to assist NRCS with the delivery of rangeland projects along with SGI. More recently, a rangeland specialist position was developed in conjunction with the National Wildlife Refuge Association and a private foundation for southwest Wyoming to directly work with PFW staff. These range ecologists positions are responsible for conducting rangeland and wildlife assessments, identifying resource concerns and landowner objectives, developing plans to address those concerns and objectives, and implementing plan strategies using available cost-share programs across a diverse landscape benefitting Service focal species and species important to our partners.

Improve Information Sharing and Communication

Generating habitat projects and information transfer comes from the establishment of an extensive network of conservation partners and landowners. WY PFW continues to work through traditional avenues of USDA State Technical Committee meetings, local

Wyoming PFW program staff providing conservation partners with a project update, Wyoming. USFWS photo.

Wind River Reservation-hosted NRCS Wetland Plant Identification Workshop. USFWS photo.

USDA work groups, and various partner coordination functions as well as giving presentations on habitat restoration techniques and habitat project updates at several gatherings of professionals including several fish and wildlife agency and conservation partner annual meetings. WY PFW staff members routinely attend local interagency meetings within their respective work areas which include representation from local county commissioners to congressional staffers providing a good forum for periodic program updates. WY PFW maintains a place in the classroom through local science fair judging and participating in a variety of youth outdoor classroom experiences held throughout the state.

Implementation

- Maintain working with partners and stakeholders on individual planning documents.
- Provide partners with an annual accomplishment report.
- Utilize farming and ranching industry associations and publication.
- Initiate state level landowner and/or partner award/recognition program.
- Support existing and explore new opportunities for long term funding options.
- Refine local project priorities through established local workgroup settings.
- Continue to provide resource information at workshops, conventions and coordination meetings.

Enhance Our Workforce

Wyoming PFW continues to build on a strong technical assistance foundation delivering effective habitat conservation by improving workforce capacity when necessary and improve existing technical and leadership skills of staff to meet the needs of our conservation partners and trust resource responsibilities. Staff work closely with conservation partners providing restoration guidance on a variety of habitat projects within their dedicated work areas, including project designs and permitting, project cost analysis, and appropriate construction methodologies. Facilitating a wide array of terrestrial and aquatic habitat projects requires a substantial investment of staff time in working with conservation partners, as well as a high degree of expertise in a wide range of technical disciplines. We will continue to strengthen our partnerships, habitat delivery, and customer service in an effort to restore and conserve habitat in an ever-changing landscape.

Implementation

- Refine and implement a strategic workforce plan to ensure that the right skills are in the right location to deliver an efficient and effective habitat conservation program.
- Seek-out partnership efforts that develop and share employee skills across conservation partner lines.
- Review annually career development guidance and training programs for staff and ensure resources are available to improve habitat conservation delivery, partnership development, and leadership skill sets.
- Continue to coordinate with other Federal, State, and local government units, Tribes, and non-governmental partners to utilize available training and development opportunities to maintain technical excellence in an environment of rapidly expanding knowledge and technology.

Increase Accountability

The mechanics (structural function) and habitat response from on-the-ground habitat restoration is fairly well understood and predictable. Forecasting project biological benefits is less certain and relies on the intuition and professional judgment of staff

Wyoming PFW program staff working with Conservation Corp students to install grazing management fence. USFWS photo.

biologists and conservation partners. To help improve accountability, a standardized monitoring process was implemented using available measurable parameters to evaluate project success. Three levels of monitoring are recognized within this monitoring plan framework, status review, site-scale and landscape scale.

Capital costs for habitat restoration projects vary greatly across the state and from year to year. To help maintain a cost-efficient program, fiscal measures are used to evaluate annual restoration capital costs. Accurately determining habitat projects costs ensures equitable and reliable sources of funding, timely project delivery, and quality habitat projects.

Implementation

- Implement and refine monitoring plan.
- Continue to incorporate creative partnerships to assist with monitoring. For example, employ the assistance of local birding groups to collect biological data and in return expand birding opportunities on lands available through willing landowners.
- Maintain and refine fiscal measures for estimating project cost, which include internal review of all previous years Service habitat work within Wyoming and published statewide annual cost analysis of conservation practices by our conservation partners.

External Factors

Factors beyond the control of the WY PFW program that could affect progress towards accomplishing long-term habitat goals and objectives include the following:

- Extreme weather, climate fluctuations, and environmental change that affect ecological processes and local economies.
- Fluctuating habitat conservation funding.
- Cyclical nature of energy development, direct impact to resources as well as project funding potential.

Monitoring Plan

Background

The PFW program is the Service's primary mechanism for delivering voluntary on-the-ground habitat improvement projects on private lands for the benefit of Federal Trust Species. Through our strategic planning process, priority based habitat focus areas were established to efficiently conserve priority fish and wildlife populations through a variety of habitat restoration, management and protection measures. Focal species selection was centered on Service trust resources, such as listed species, species of special concern to the Service, migratory birds, tribal significant species or designated important species of our conservation partners. WY PFW recognizes that this list of fish and wildlife resources is also held in trust and/or important to our federal, state, and local partners. Therefore, it was important that our WY PFW Strategic Plan incorporates partner input and to the degree practicable is consistent with Service needs and mandates. The plan also provides direction on conservation actions needed to reduce or eliminate threats/stressors and habitat improvement targets. This strategic plan effort spans the period of 2017–2021.

With the construction of an overarching conservation delivery roadmap complete, site scale project planning efforts are in the hands of local PFW biologists and our many conservation partners. Primary mission of PFW field biologists is to develop opportunities, determine site threats/stressor, conservation actions needed to

Wyoming PFW staff and a conservation partner conducting rangeland monitoring. USFWS photo.

reduce or remove threats/stressors, implement actions and monitoring provisions sufficient to document project implementation and removal of threat/stressors. Three levels of monitoring are recognized within this monitoring plan framework, status review, site-scale and landscape scale. The goal of this monitoring plan is to standardize a process using available measurable parameters to evaluate project success.

Level I – Status Review

WY PFW program will conduct Level I Status Reviews on all new projects to ensure scope of work is completed as defined in the Private Landowner Agreement (PLA). Annual site visits will be conducted by PFW biologists until all phases of the project are complete and a final site visit report completed at project end (Attachment 1). The site visit form will be submitted to the Lander PFW office as part of the payment process and incorporated into the official field file.

Level II –Site Specific Biological Monitoring

WY PFW program works in four major habitat types, upland, wetland, riparian and stream. Monitoring provisions included in Level II will be sufficient to determine if habitat objectives are being met and document removal or reduction of threat/stressors. Project generated data will be the primary source of measurable parameters for evaluating projects success. Three types of information routinely collected to aid in project design and corresponding monitoring plan include: 1) existing conditions (pre-construction), 2) as-built conditions (post-construction), and 3) characteristics and conditions of suitable reference site. Reference sites are most commonly used in situations where detailed data is not readily available.

Threats/stressors and remediation measures are determined during the planning process. In some cases, threats have been previously identified through established sources. For example, a statewide fish passage database identifies significant barriers to fish passage on many of Wyoming's rivers establishing a removal importance hierarchy. In this instance, fish passage monitoring would be documenting barrier (threat) removal or presence/absence survey. Level II monitoring will determine if threat has been removed or reduced through evaluation of key habitat attributes (Table 2.). A standardized form will be used to collect presence/absence (Table 1, Class A) data for each site. Field measurement surveys (Table 1, Class B) data if available will be attached to the standardized form. WY PFW or representative will conduct a status review on a subset of projects with a goal of completing reviews on 10% of active projects. Set intervals for post-construction evaluations were influenced by several factors including, project complexity, manpower availability, financial investment, newness of technology and other factors (Table 2.).

Table 1. Level II Monitoring

WY PFW Conservation Practice	Key Habitat Attribute - Class A (Presence/Absence Survey)	Key Habitat Attribute - Class B (Field Measurement Survey)
Stream Restoration	Bed Features (Y/N) Bank Features (Y/N) Correct Pattern (Y/N) Correct Profile (Y/N) Correct Dimension (Y/N)	BEHI Index Pfankuch Companion Inventories Photo Point Transect
Riparian Restoration	Cover Types: Native Grass (Y/N) Wetland Plants (Y/N) Shrubs (Y/N) Trees (Y/N) Recruitment/Reproduction (Y/N)	Proper Function Condition Green line Stability Cover by Life Form Transect Stubble Height Photo Point Transect
Fish Passage	Physical Barrier Removed (Y/N) Thermal Barrier Removed (Y/N)	Fish Passage Survey Temperature Loggers
Fish Entrainment	Open System: Fish Screen (Y/N)	Fish Loss Survey

Sage Steppe Enhancement	Perennial Cover (Y/N) Sagebrush(Y/N) Native Grass Species (Y/N) Native Forb Species (Y/N)	Cover by Life Form Transect Stubble Height Photo Point Transect
Grassland Enhancement/Restoration	Perennial Cover (Y/N) Native Grass Species (Y/N) Native Forb Species (Y/N)	Cover by Life Form Transect Stubble Height Photo Point Transect
Wetland Establishment	Hydrology (Y/N) Hydrophytes (Y/N)	Wetland Delineation Photo Point Transect
Wetland Restoration	Hydrology (Y/N) Hydrophytes (Y/N)	Wetland Delineation Photo Point Transect

Table 2. Projected Evaluation Intervals

WYPFW Conservation Practice	Project Evaluations Interval (Year)
Stream Restoration	1,2,5,10
Riparian Restoration	1,3,10
Fish Passage	1,5
Fish Loss/Entrainment (Screening)	1,5,10
Sage Steppe Enhancement	1,3,10
Grassland Enhancement	1,5
Wetland Restoration/Enhancement	1,5

Level III – Landscape Scale Monitoring
Landscape scale monitoring is designed to document the status or change over time of a resource. Availability of Level III data sets is variable across focus areas. The state wildlife agencies are the greatest source of information for game and non-game species of special concern along with Service Federal trust and Tribal trust species. The ability to monitor select species was considered during focal species list development.

For example, Bear River Focus Area target species (Exhibit 2) relates well with on-going local monitoring efforts by several conservation partners (Exhibit 1). Local monitoring efforts provide broad status and trend information for target species found within the watershed. In some instances, local population sampling takes place on PFW projects providing the ability to more precisely see influence of habitat actions validating planning process.

Exhibit 1.

Current Monitoring Efforts -Bear River Focus Area
NRCS, UCCD, and UW conduct rangeland health monitoring at selected sites
RMBO- Monitoring Wyoming's Birds (MWB) Program (6 locations)
TU - radio-tagged Bonneville cutthroat trout in the upper Bear River
TU- irrigation ditch salvage; documenting numbers and species of fish
UCCD - water quality monitoring
USFWS Cokeville NWR Migratory Bird Surveys
USFWS Cokeville NWR Habitat Evaluations
WYGF - secretive marsh bird breeding survey
WYGF - greater sage-grouse annual lek counts
WYGF - semi-annual stream electrofishing for SGCN fish species
WYGF - annual waterfowl surveys

Exhibit 2.

Priority Species – Bear River Focus Area
Upland – U, Wetland –W, Riparian– R, Stream-S
White-faced ibis - W
Northern pintail -W
Redhead -W
American bittern -W
Sandhill crane - W/R
Yellow-billed cuckoo - R
Greater sage-grouse - U
Bonneville cutthroat trout-S
Leatherside chub-S

Level III WYPFW Monitoring Commitment
WY PFW will continue to work with conservation partners on landscape-scale monitoring efforts to better determine variables influencing populations, improving future conservation work targeting and project success. For example, work with partners to develop a methodology to link habitat restoration actions with on-site sage-grouse data to specifically determine if habitat projects are having success at the population level (Table 3).

Non-game species often lack population goals making it difficult to determine habitat restoration targets. WY PFW will work with conservation partners to create and/or utilize site specific predictive habitat modeling needs assessments tools like Energetic Carrying Capacity (ECC) and Resource Site Factors (RSF) modeling to determine quantity of habitat needed to carry a predetermined population as well as specific site habitat contributions. WY PFW will continue to focus on identified target species, incorporate population level determinations when defined and build them into future strategic plans. WY PFW will continue to employ creative partnerships to assist with monitoring, for example, utilize the assistance of local birding groups to collect biological data and in return expand birding opportunities on lands available through willing landowners.

Table 3. Sage Grouse Lek Count Data (Sand Hills PFW Grazing System).

Wind River Reservation Sage Grouse Leks in the Sandhills area - peak number of males observed on leks. 4/12/2014

Lek Name	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Peak Males	Low Males	Avg Males 1986 to 2012	% of Peak Males for 2013	% of Average for 2013
Sand Hills (#38)										5				0							0	0	0	0	0	0	0	0	5	0	1	0%	0%
Sharpnose (#22)	480		159	102	64	107	67	39	18	19	0	56	90	74	166	123	71	87	96	155	145	106	62	33	38	67	49	20	480	0	97	4%	21%
Sharpnose Draw																						12	0	0	0	0		0	12	0	2	0%	0%
Sharpnose Draw Northwest																											7	15	15	7		100%	
Sharpnose East																				29	54	42	11	6	7	0	0	0	54	0	21	0%	0%
Sharpnose Reservoir				37														0								0	0		37	0	12	0%	0%
Sharpnose Southeast (#23A)			40	5	55	1	6	3	0		0	67	0	30				0	0	0	0	0	0	0	0	0	0	0	67	0	10	0%	0%
WyPo (#16)					43	23	17	2	0	20	23	0	44	50	6	28	13	16	11	26	60	36	20	0	0	0	0	0	60	0	20	0%	0%
WyPo Pipeline A																					15	0	0				0	0	15	0	4	0%	0%
Total Peak Males for 8 leks	**480**		**199**	**144**	**162**	**131**	**90**	**44**	**18**	**44**	**23**	**123**	**134**	**154**	**172**	**151**	**84**	**103**	**107**	**210**	**274**	**196**	**93**	**39**	**45**	**67**	**56**	**35**			**168**		

Table 3. Sage Grouse Lek Count Data (Sand Hills PFW Grazing System).

Limitations

Our ability to achieve monitoring objectives is influenced by a variety of factors including the availability of human and technical resources, the level of support we receive from our conservation partners, and other variables such as unbridled development and weather. It should be also recognized in some management situations, formal monitoring may not be necessary when the outcome of an action is well known (Williams et al. 2007).

Attachment 1

WY PFW Level I Monitoring Form

SITE VISIT REPORT

Landowner Agreement #_____

Prism FA Award # _____

Final or Interim
Select One

Scope of Work
(Describe the restoration activities ex. fence and/or livestock watering facilities were installed to facilitate proper grazing management, grassland enhancement and migratory bird conservation).

Project Status
(To be used for an interim report ie…what's been done up to the 1 year mark)
(Example Language)-About 2 paragraphs

Species Benefited
_____. (You can reference conservation plans as/if you deem necessary)

Optional/ Literature Cited: (Example)

U.S. Fish and Wildlife Service [USFWS]. 2012. Partners for Fish and Wildlife Program Mountain-Prairie Strategic Plan, 2012–2016. U.S. Fish and Wildlife Service, Lakewood, Colorado.

Payment Method
Describe selection of the payment method (Ex. SF-270, this is a private landowner who chose to be waived from the ASAP system)

As the PFW biologist managing this project I certify that Landowner Agreement # ____(project type ex. Wetland enhancement) has been completed (or for interim…is in the process of being completed) in accordance with all provisions of the agreement.

_____ _____
PFW Biologist Date

_____ _____
Landowner / Cooperator Date

Attachment 2

WY PFW Level II

Monitoring Report Form

Project Name and PLA Number: _____

Primary Federal Trust Resource: _____

Project Scope/Objectives (include agreed changes/PLA mofidication): _____

Project Objectives Met: _____ Yes _____ No (if no, explain) _____

_____

_____

Project Biological Outcomes

Wyoming PFW Conservation Practice(s): _____

Key Habitat Attribute Class A: _____

Key Habitat Attribute Class B: (attach to form) _____

_____

_____

Photo Point Name:

UTM _____

Photo Point Name:

UTM _____

Photo Point Name:

UTM _____

Photo Point Name:

UTM _____

Minimum one photo point per project

Project Non-Biological Outcomes

Planned Project Components	Deliverables	Project Start Date	Project Completion Date
(i.e. 1,000 ft 4-strand barbed fence)			

Planned Project Components	Budgeted Cost	Final Cost
(i.e. 1,000 ft 4-strand barbed fence)		

Lessons Learned

(What worked, what didn't and ways to improve project construction/delivery):

_____

_____

_____

_____

_____

_____

_____ _____

Private Lands Biologist Date

Level II Monitoring

WY PFW Conservation Practice	Key Habitat Attribute - Class A (Presence/Absence Survey)	Key Habitat Attribute - Class B (Field Measurement Survey)
Stream Restoration	Bed Features (Y/N) Bank Features (Y/N) Correct Pattern (Y/N) Correct Profile (Y/N) Correct Dimension (Y/N)	BEHI Index Pfankuch Companion Inventories Photo Point Transect
Riparian Restoration	Cover Types: Native Grass (Y/N) Wetland Plants (Y/N) Shrubs (Y/N) Trees (Y/N) Recruitment/Reproduction (Y/N)	Proper Function Condition Green line Stability Cover by Life Form Transect Stubble Height Photo Point Transect
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Fish Entrainment	Open System: Fish Screen (Y/N)	Fish Loss Survey
Sage Steppe Enhancement	Perennial Cover (Y/N) Sagebrush(Y/N) Native Grass Species (Y/N) Native Forb Species (Y/N)	Cover by Life Form Transect Stubble Height Photo Point Transect
Grassland Enhancement/Restoration	Perennial Cover (Y/N) Native Grass Species (Y/N) Native Forb Species (Y/N)	Cover by Life Form Transect Stubble Height Photo Point Transect
Wetland Establishment	Hydrology (Y/N) Hydrophytes (Y/N)	Wetland Delineation Photo Point Transect
Wetland Restoration	Hydrology (Y/N) Hydrophytes (Y/N)	Wetland Delineation Photo Point Transect

Projected Evaluation Intervals

WYPFW Conservation Practice	Project Evaluations Interval (Year)
Stream Restoration	1,2,5,10
Riparian Restoration	1,3,10
Fish Passage	1,5
Fish Loss/Entrainment (Screening)	1,5,10
Sage Steppe Enhancement	1,3,10
Grassland Enhancement	1,5
Wetland Restoration/Enhancement	1,5

Attachment 3

Wyoming Ongoing Monitoring Efforts Listed by Focus Area

Bear River Focus Area

A. NRCS, Uinta County Conservation District (UCCD), and University of Wyoming rangeland health monitoring

B. North American Breeding Bird Surveys

C. Bird Conservancy of the Rockies – Monitoring Wyoming's Birds (MWB) Program

D. Trout Unlimited
   i. Radio-tag Bonneville cutthroat trout in the upper Bear River
   ii. Irrigation ditch salvage; documenting numbers and species of fish

E. UCCD – water quality monitoring

F.Cokeville National Wildlife Refuge
   i. Migratory bird surveys
   ii. Habitat evaluations

G. Wyoming Game and Fish Department
   i. Secretive marsh bird survey
   ii. Greater sage-grouse annual Lek counts
   iii. Semi-annual stream electrofishing for Species of Greatest Conservation Need (SGCN) fish species
   iv. Annual (winter and spring)waterfowl surveys
   v. Stream barrier assessment
   vi. Site specific fish entrainment surveys

Upper Green River Focus Area

A. NRCS and University of Wyoming rangeland health monitoring

B. North American Breeding Bird Survey

C. Bird Conservancy of the Rockies – Monitoring Wyoming's Birds (MWB) Program

D. Trout Unlimited
   i. Fish barrier study
   ii. Irrigation ditch salvage; documenting numbers and species of fish

E. Seedskadee National Wildlife Refuge
   i. Migratory bird surveys
   ii. Habitat evaluations

F.Wyoming Game and Fish Department
   i. Secretive marsh bird survey
   ii. Greater sage-grouse annual Lek counts
   iii. Semi-annual stream electrofishing for SGCN fish species
   iv. Annual (winter and spring waterfowl surveys)
   v. Annual trumpeter swan survey
   vi. Stream barrier assessment
   vii. Site specific fish entrainment surveys

Upper Sweetwater – Red Desert Focus Area

A. NRCS, BLM and University of Wyoming rangeland health monitoring

B. North American Breeding Bird Surveys

C. Bird Conservancy of the Rockies – Monitoring Wyoming's Birds (MWB) Program

D. Wyoming Game and Fish Department
   i. Greater sage-grouse annual Lek counts
   ii. Annual waterfowl surveys
   iii. Annual raptor surveys with BLM
   iv. Stream barrier assessment

Wind River Focus Area

A. NRCS, BIA, U.S. Fish and Wildlife Service and University of Wyoming rangeland health monitoring

B. North American Breeding Bird Surveys

C. Bird Conservancy of the Rockies – Monitoring Wyoming's Birds (MWB) Program

D. U.S. Fish and Wildlife Service
   i. Irrigation ditch salvage; documenting numbers and species of fish
   ii. Lander Fish and Wildlife Conservation Office (FWCO) large carnivore surveys
   iii. Lander FWCO sage grouse Lek counts
   iv. Lander FWCO big game surveys

E. Wyoming Game and Fish Department
   i. Secretive marsh bird survey
   ii. Greater sage-grouse annual Lek counts
   iii. Semi-annual stream electrofishing for sauger
   iv. Annual (winter and spring) waterfowl surveys
   v. Colonial waterbird survey
   vi. Annual trumpeter swan survey with Service
   vii. Annual raptor survey with Service
   viii. Stream barrier assessment with Service
   ix. Annual stream and lake fish surveys with Service
   x. Site specific fish entrainment surveys with Service

Laramie Plains Focus Area

A. NRCS and University of Wyoming rangeland health monitoring

B. North American Breeding Bird Surveys

C. Bird Conservancy of the Rockies – Monitoring Wyoming's Birds (MWB) Program

D. U.S. Fish and Wildlife Service
   i. Annual Wyoming toad surveys

E. Wyoming Game and Fish Department
   i. Greater sage-grouse Lek counts
   ii. Annual (winter and spring) waterfowl surveys
   iii. Annual small mammal surveys
   iv. Trumpeter swan surveys with Service
   v. Raptor surveys with Service
   vi. Stream barrier assessment with Service
   vii. Annual stream and lake fish surveys with Service

Little Snake River – Upper North Platte Focus Area

A. NRCS, Little Snake River Conservation District (LSRCD) and University of Wyoming rangeland health monitoring

B. North American Breeding Bird Surveys

C. Bird Conservancy of the Rockies – Monitoring Wyoming's Birds (MWB) Program

D. LSRCD – waterbird surveys

E. Wyoming Game and Fish Department
   i. Greater sage-grouse annual Lek counts
   ii. Semi-annual stream electrofishing for SGCN fish species
   iii. Annual (winter and spring) waterfowl surveys
   iv. Stream barrier assessment
   v. Annual river fish surveys and non-native fish removal program

Goshen Hole Focus Area

A. NRCS and University of Wyoming rangeland health monitoring

B. North American Breeding Bird Surveys

C. Bird Conservancy of the Rockies – Monitoring Wyoming's Birds (MWB) Program

D. Wyoming Game and Fish Department
   i. Annual (winter and spring) waterfowl surveys
   ii. Annual small mammal surveys
   iii. Raptor surveys
   iv. Stream barrier assessments
   v. Annual stream and lake fish surveys

Black Hills Mixed-Grass Focus Area

A. NRCS and University of Wyoming rangeland health monitoring

B. North American Breeding Bird Surveys

C. Bird Conservancy of the Rockies – Monitoring Wyoming's Birds (MWB) Program

D. Wyoming Game and Fish Department
   i. Secretive marsh bird breeding survey
   ii. Greater sage-grouse annual Lek counts
   iii. Annual (winter and spring) waterfowl surveys
   iv. Stream barrier assessment
   v. Annual stream and lake fish surveys
   vi. Site specific fish entrainment surveys

Powder – Tongue River Focus Area

A. NRCS and University of Wyoming rangeland health monitoring

B. North American Breeding Bird Surveys

C. Bird Conservancy of the Rockies – Monitoring Wyoming's Birds (MWB) Program

D. Wyoming Game and Fish Department
   i. Secretive marsh bird breeding survey
   ii. Greater sage-grouse annual Lek counts
   iii. Annual (winter and spring) waterfowl surveys
   iv. Stream barrier assessment
   v. Annual stream and lake fish surveys
   vi. Site specific fish entrainment surveys